

1、Features:

VT301x is a low-cost sub-1GHz transceiver, It's designed for various low-power wireless applications. VT301x build in with all necessary circuit and component, such as crystal, inductors, capacitors and necessary matching circuit. Its Highly integrated and low-power consumptions make it an ideal solution for most wireless applications. VT301x's PA output power can be configured, max reach +11dBm, same to data rate, up to 150kbps. users can finished all VT301x's control just via SPI interface, it is designed for easily use. The build-in 64Bytes TX/RX FIFO reduce the MCU's loading a lot, so users can select a low-cost MCU to finish wireless system's design.

2、Typical Applications

- Remote control
- Toy control
- Industrial control
- Wireless Sensor Networking
- Home automation
- Health monitors

3、Pin Configuration & Description

Pin No.	Symbol	I/O	Function Description
1	NC		No connected.
2	GND	G	Ground.
3	SCS	I	Serial interface select input.
4	SCK	I	Serial clock input.
5	SDIO	I/O	Serial interface data IO.
6	GPIO1	I/O	General Purpose Digital I/Os, they can be configured to perform various functions, such as TX/RX IRQs, 4-SPI's MISO, FIFO status, Direct Mode's data streams, etc.
7	GPIO2	I/O	
8	GPIO3	I/O	
9	GND	G	Ground.
10	VDD	VDD	2.2-3.6V power supply. +3.3V is recommended.
11	GND	G	Ground.
12	GND	G	Ground.
13	GND	G	Ground.
14	GND	G	Ground.
15	GND	G	Ground.
16	GND	G	Ground.
17	GND	G	Ground.
18	GND	G	Ground.
19	GND	G	Ground.
20	ANT	O	External Antenna Interface.

5、Operating Modes

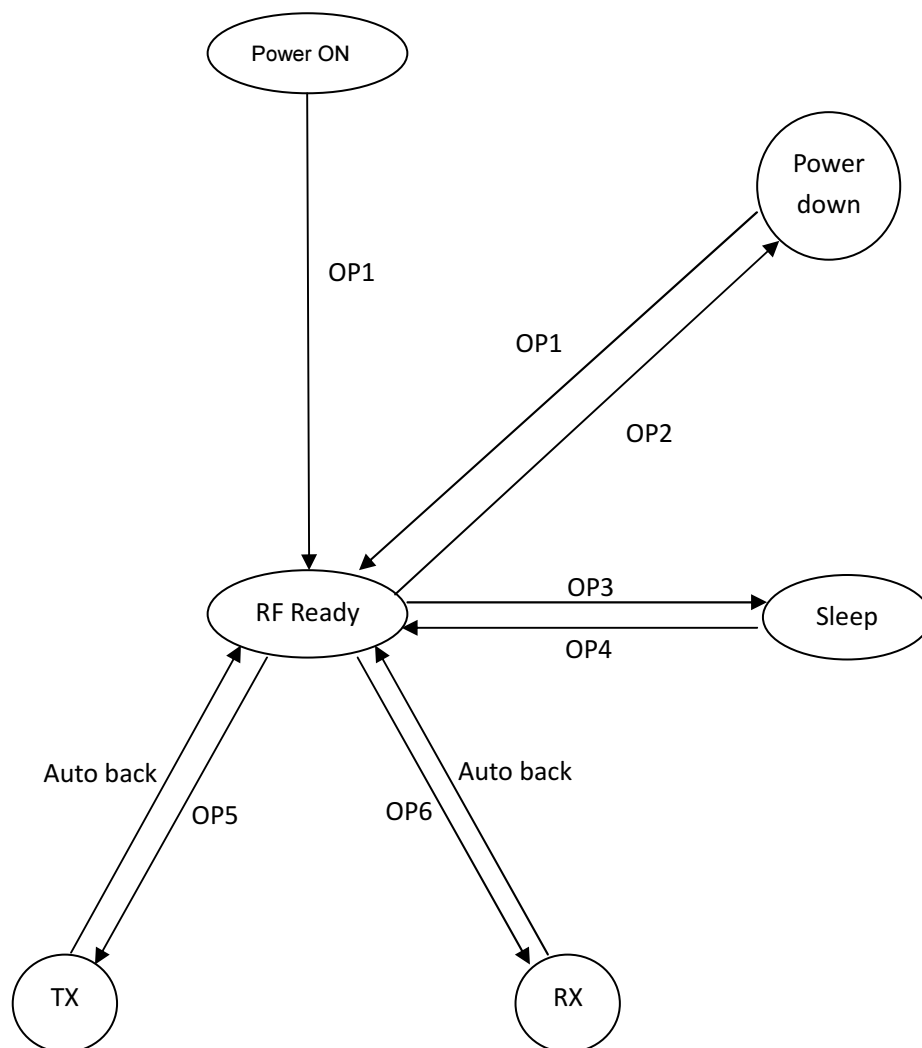
Power Down mode:

Sleep mode:

Ready mode:

TX mode:

RX mode:



Operate explain.

SYMBLE	API	Description
OP1	rf_init()	Initial RFIC
OP2	rf_enter_pdn()	Make RFIC enter power down mode.
OP3	rf_enter_sleep()	Make RFIC enter sleep mode.
OP4	rf_enter_ready()	Make RFIC ready to transmit.
OP5	rf_enter_tx()	Make RFIC enter TX mode.
OP6	rf_enter_rx()	Make RFIC enter RX mode.

※ for more detail, please refer to reference code.

6、Packet Processing:

Preamble(4Bytes)	Address(4Bytes)	Payload(64Bytes)	CRC(2Bytes)
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Preamble:

Every transmit event, *Preamble* will be firstly transmitted, it is auto generate by Hardware, User can configure *preamble* length as 1/2/3/4Bytes. Default value is 4Bytes.

Address:

Every device wanna to communicate successfully should set the same *Address* value, it is no doubt, user can configure *address* length to 2/4/6/8Bytes. Default value is 4Bytes.

Payload:

After *Address* field, VT301x will start to transmit *Payload*. user can configure *Payload* length max to 64Bytes.

CRC:

If *CRC* is enable, after finished transmit *Payload*, 2-Bytes *CRC* value will be added, the Rx device will auto *CRC* check.

7、Register Table

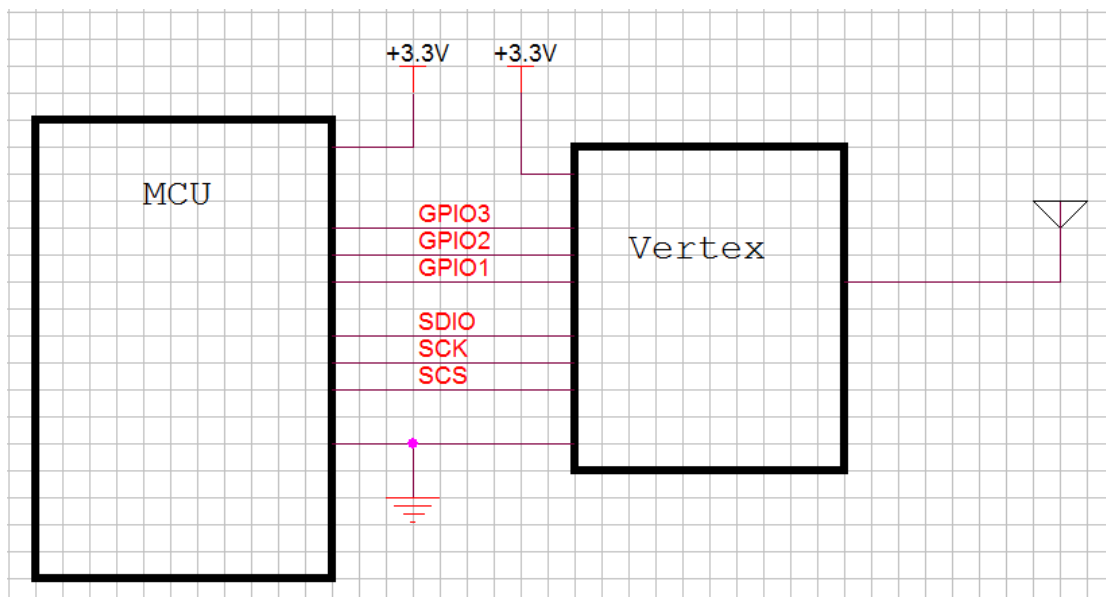
Address	Symbol	Description
0x00	DR	Data Rate. (TBL1)
0x01	CHAN1	Channel number 1. (TBL1)
0x02	CHAN2	Channel number 2. (TBL1)
0x08	GIO1/2	GPIO1/2 function select.(TBL2)
0x09	GIO3	GPIO3 function select. (TBL2)
0x0D	FIFO_LEN	TX/RX FIFO length setting. (TBL2)
0x0E	FIFO_CFG	Preamble, Address length setting. (TBL2)

※ for more detail, please refer to reference code.

8、Electrical Specification

Parameter	Symbols	Min.	Typ.	Max.	Unit
Operating temperature		-40		80	°C
Operating supply voltage	VDD	2.2	3.3	3.6	V
Current consumption	Power Down		0.5		uA
	Sleep		5		uA
	Ready		3		mA
	Rx		5		mA
	Tx@11dBm		40		mA

9、Typical Application Schematic



10、Package Markings(Top Marks)

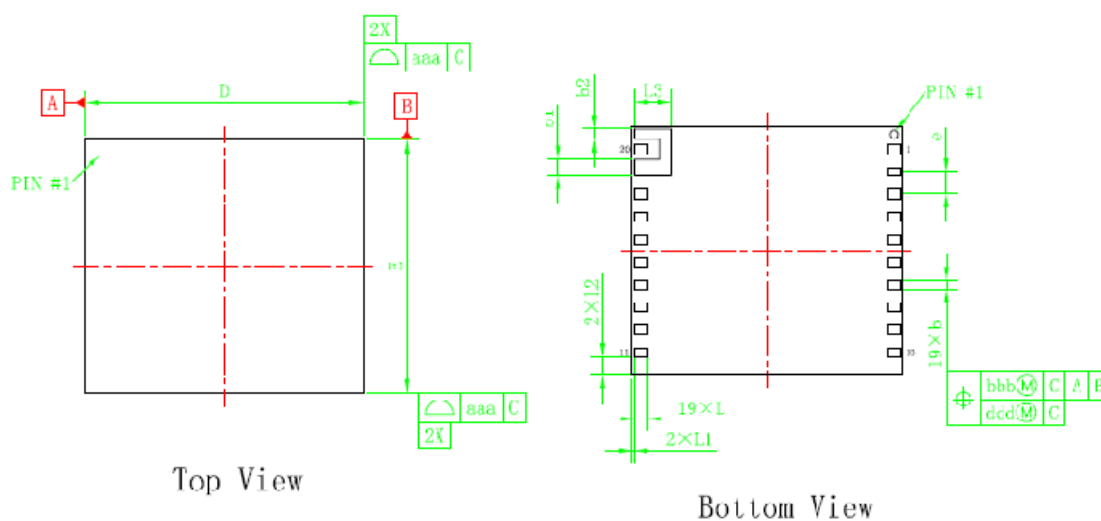
10.1 Vertex Top Mark.



10.2 Top Mark Explanation.

Type No.	Frequency Band	Package Type	Remarks
VT3014	433M		
VT3015	470~510M		

11、Package Outline



symbol	Dimension in mm			Dimension in inch		
	MIN	NOM	MAX	MIN	NOM	MAX
A	—	0.990	1.090	—	0.039	0.043
c	0.160	0.190	0.220	0.006	0.007	0.009
D	11.900	12.000	12.100	0.469	0.472	0.476
E	10.900	11.000	11.100	0.429	0.433	0.437
L	0.525	0.600	0.675	0.021	0.024	0.027
L1	0.000	0.075	0.150	0.000	0.003	0.006
L2	0.725	0.800	0.875	0.029	0.031	0.034
L3	1.551	1.626	1.701	0.061	0.064	0.067
e	—	1.000	—	—	0.039	—
b	0.350	0.400	0.450	0.014	0.016	0.018
b1	0.700	0.750	0.800	0.028	0.030	0.031
b2	0.367	0.442	0.517	0.014	0.017	0.020
aaa		0.150			0.006	
bbb		0.150			0.006	
ccc		0.100			0.004	
ddd		0.080			0.003	

12、 Document History

Version	Date	Description
0.1	2014.06.06	First preliminary data sheet release.

13、Contact Information